



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

## PROBLEMS.

---

58. Proposed by B. F. FINKEL, A. M., Professor of Mathematics and Physics, Drury College, Springfield, Missouri.

Two men, A and B, in Boston, hire a carriage for \$25, to go to Concord, N. H., and back, the distance being 72 miles, with the privilege of taking in three more persons. Having gone 20 miles, they take in C; at Concord, they take in D; and when within 30 miles of Boston, they take in E. How much shall each man pay? [From *Greenleaf's National Arithmetic*.]

59. Proposed by ISAAC L. BEVERAGE, Monterey, Virginia.

A broker charges me  $1\frac{1}{2}$  per cent. brokerage for buying some uncurrent bank bills at 20 per cent. discount. Of these bills 4 of \$50. each become worthless, but the remainder I dispose of at par, and make by the operation \$364. What was the face amount? [Which answer is correct, \$3000, or \$3048 $\frac{24}{37}$ ?]

---

## ALGEBRA.

---

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

---

## SOLUTIONS OF PROBLEMS.

---

56. Proposed by CHAS. E. MYERS, Canton, Ohio, and Hon. JOSIAH H. DRUMMOND, LL. D., Portland, Maine.

(a) How much can be paid for a bond, bearing 5 per cent. interest, and having ten years to run, so as to realize 3 per cent. on the investment? (b) At what price must the government sell 5 per cent. \$100 bonds to run ten years, interest payable annually, to make them the same to the buyer as 3 per cent. bonds at par, to run ten years, interest payable annually, provided the buyer can invest all interest received at 4 per cent. interest, payable annually?

Solution by J. K. ELWOOD, A. M., Principal of Colfax School, Pittsburg, Pennsylvania.

Let  $x$  = price,  $a$  = face,  $n$  = number of periods,  $R$  = rate bond bears,  $r$  = rate to be realized,  $r'$  = rate on interest.

The interest on bond is an annuity at compound interest whose final value  $= \frac{Ra}{r'}[(1+r')^n - 1]$ , which added to the *face* value of bond must equal the compound amount of the *price* for  $n$  periods, or  $x(1+r)^n$ .

$$\therefore x = \frac{a + Ra[(1+r')^n - 1]}{(1+r)^n} \quad \text{For (a), } a = 100, \ n = 10, \ R = .05, \ r = .03,$$

$$r' = .03.$$